

### *The Influence of Urban Form on Spatial Costs*

Hugh B. Wenban-Smith

There is a general presumption in urban economics that average commuting costs are increasing in city size. By analogy, it might be supposed that other spatial costs, such as distribution costs for utility services or access costs to schools and hospitals, will have the same characteristic. However, the basic commuting result derives from an urban model in which population density is uniform out to the city boundary and commuters travel individually and radially to the central business district. It is more realistic to suppose that population density declines away from the centre, as in the standard monocentric urban model and that there are likely to be scale economies in both commuting (e.g. from use of buses or metros) and distribution (e.g. larger diameter water mains). The aim of this paper is to explore the implications of such factors for spatial costs, using data on water distribution costs for 35 “urban districts” in the supply area of one of the water companies in England & Wales. Distribution cost elasticities are quantified for two contrasting urban development scenarios, confirming that in the case of *Suburbanization* average distribution costs are increasing in city size, as generally assumed; however, in the case of *Densification* these costs are decreasing in city size. The interaction with water production costs is also considered, showing that, in the case of *Densification*, scale economies in production are reinforced by density economies in distribution, whereas in the case of *Suburbanisation* they are offset to a greater or lesser extent by diseconomies in distribution, i.e. higher spatial costs. A final section relates these findings to the literature on commuting costs, urban agglomeration and sprawl. It is concluded that high density settlement has the potential to reduce average costs in distribution (including commuting) as well as production, so that both favour agglomeration. Accordingly, urban modelers should be cautious about assuming that commuting (and other spatial costs) are always increasing in city size.

**Keywords:** Urbanisation, Spatial analysis, Returns to scale, Water utilities

JEL classification: R12, R32, D24, L95

*The shop around the corner in the Internet age*

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We study a spatial competition model which is a variant of the celebrated Hotelling (1929) framework. One of the firm is a brick-and-mortar one while the other is on-line. Both firms sell the same product except that (constant) marginal costs may differ. Consumers going to the shop around the corner face transportation costs according to their address whereas on-line consumers bear a fix cost that may capture technological burden and risk premium. In the pricing Nash equilibria the “new economy” firm has smaller market shares even though it offers more attractive prices. For the on-line firm to become a leader, the cost difference must be large enough to offset the comparative disadvantage it face on the demand side. In the long run, increasing competition ultimately forces the local firm out of downtown. We argue that this effect may be related to some of the forecasts concerning the geographical impact of the development of remote access services.

**Keywords:** Spatial competition, economic geography, E-marketing

JEL classification: R12, L86, L11

*The range of local public services and population size: Is there a “zoo effect” in French jurisdictions?*

Quentin Frère, Hakim Hammadou, Sonia Paty

This article contributes to the small literature on the relationship between the range of local public services and population size. Using new data on French local jurisdictions, we test the hypothesis that larger jurisdictions provide a broader range of public goods (the so-called “zoo effect”, Oates (1988)). We take advantage of the fact that, in France, many municipalities recently joined together, forming groups of municipalities (or communities) in order to achieve economies of scale. Using spatial econometrics, we find some evidence for the existence of a zoo effect in French communities. In other terms, larger communities provide a broader range of services than smaller ones. The intensity of the zoo effect is higher in urban than in rural areas.

**Keywords:** local public services, population size, zoo effect, French jurisdictions, communities, spatial econometrics.

JEL classification: H4, H7

*Cordon pricing in the monocentric city: theory and application to Paris region*

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We propose a method to compute an equilibrium solution for the monocentric city model with traffic congestion, and to quantify the impact of cordon tolls on social surplus. The focus of this paper is on the comparison of road

pricing of one and two cordons, with the no toll and first-best situations as benchmarks.

We find that a one-cordon toll yields a social efficiency of 63% with respect to first-best, and that an optimal two-cordon toll increases the efficiency to 73%. Both policies have a positive impact on CO<sub>2</sub> emissions because they reduce the average length of trips and reduce the road size.

**Keywords:** Monocentric model, Cordon toll, Acceptability of road pricing

JEL classification: R21, R41, R48

### *Public Transport Infrastructure, Urban Sprawl, and Post-carbon Cities*

Dominique Bureau

Curbing greenhouse gases emissions from transport in cities is a major challenge for climate policies. The pioneering works of Newman and Kenworthy suggest that many of these emissions could be avoidable, since they result from city densities and the share of road traffic in urban transport. However, implementing a change raises difficult questions. The respective roles of transport and land use policies are controversial. There is an intense debate about priorities between proponents of vehicle efficiency improvements, advocates of abrupt changes in mobility behaviours, and heralds of public transport.

In Europe, the sustainable city is generally seen as the inversion of the urban sprawl process, coupled with the densification of inner suburbs thanks to new public transport infrastructure. Our analysis provides an argument in favour of this scenario, by noting that cost-benefit assessments of these projects should take into account the benefits of induced changes in urban densities, even for marginal extensions.

But all factors impacting urban sprawl must also be properly valued. A stylised example of the model shows that the view a single pre-determined type of post-carbon city is thus far too simplistic.

**Keywords:** urban sprawl, public transport, climate change policies

JEL classification: R48, R52

### *Geographical Economics: A Historical Perspective*

Jacques-François Thisse

This paper provides a bird-eye overview of the history of spatial economic theory. It is organized around three main ideas (and authors): (i) land use and urban economics (Thünen), (ii) the nature of competition across space (Hotelling), and (iii) new economic geography and the emergence of economic agglomerations (Krugman).

**Keywords:** urban economics, spatial competition, economic geography

JEL classification: B10, B20, B40, F20, L13, R12, R30